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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : William B. S. McDougall et al. Art Unit : 3677
Serial No. : 10/688,033 Examiner : Ruth C. Rodriguez
Filed : October 15, 2003 Conf. No. : 2181
Title : WOVEN TOUCH FASTENER PRODUCTS

Mail Stop Appeal Brief - Patents

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDED BRIEF ON APPEAL

(1) Real Party in Interest

The real party in interest is Velcro Industries B.V., Curacao, Netherlands Antilles.

(2) Related Appeals and Interferences

There are no related appeals or interferences.

(3) Status of Claims

Claims 1-23 are canceled.

Claims 24-49 are rejected.

(4) Status of Amendments

All amendments have been entered.

(5) Summary of Claimed Subject Matter

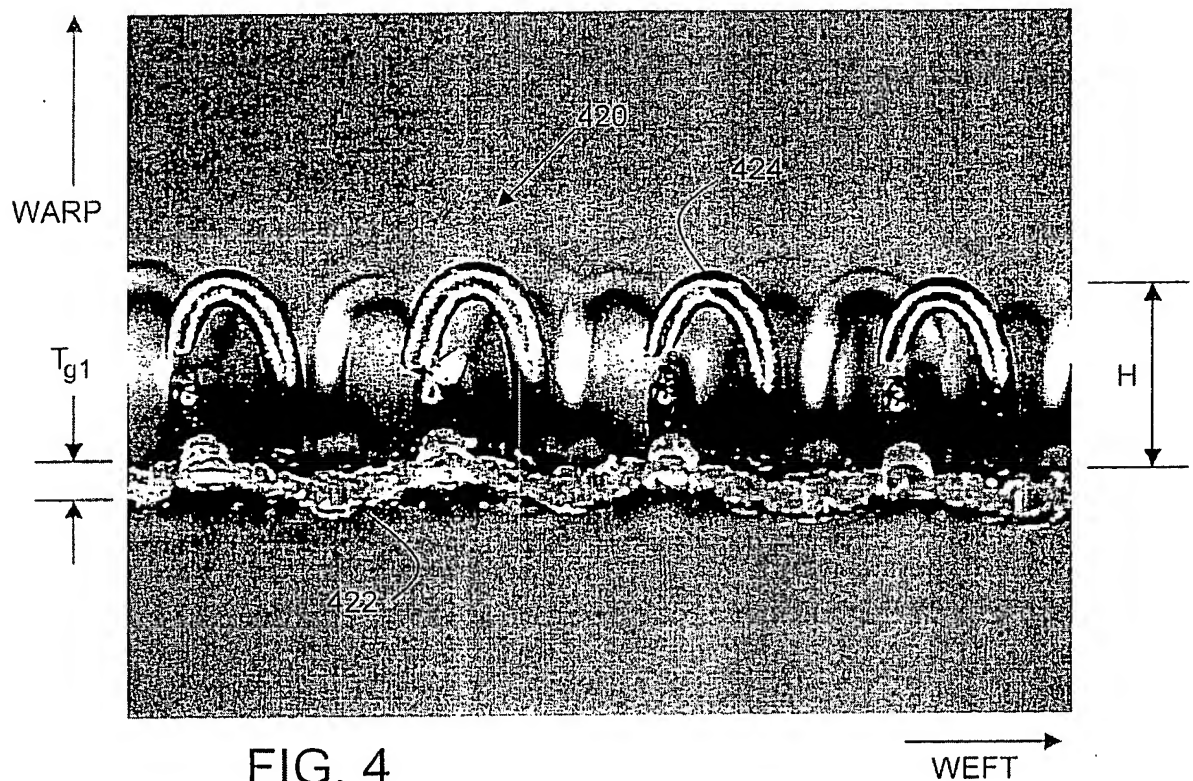
The claimed invention relates to woven hook fastener products. Such products are known to have a fabric base with ground yarns 422 comprising interwoven warp yarns and

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filling yarns extending respectively in warp and filling directions, and hook filaments 424 interwoven with the fabric base and forming hooks extending from one side of the fabric base for engagement with loops. Such a structure is illustrated as 420 in Applicants' Fig. 4, reproduced below, and is described in the Specification on page 2, line 26 to page 3, line 2, and on page 6, line 23 to page 7, line 2.



It is known to form such hook-shaped structures by first forming stabilized loops of the hook filaments, and then severing individual loops to form a hook. The resulting hook has a structure corresponding to a severed loop, such as shown in the above figure. Applicants' **independent claim 24** specifically features such a cut loop hook structure and further recites that the hook filaments 424 extend from a near side of the fabric base to a *mean hook height of less*

than about 6.0 times a nominal diameter of the hook filaments. Hook height is labeled as 'H' in the above figure. Nominal hook filament diameter is shown as 'd1' in Fig. 6A. The low ratio of hook height H to filament diameter d1 results in a comparably stout hook, as compared to known prior art woven filament hooks.

The woven base of the hook product includes ground (warp and weft) yarns 422 that are interwoven as known in the art. The hook filaments 424 are also interwoven through the fabric base. Applicants' **independent claim 40** specifically features an *overall base thickness* (exclusive of the hook filaments), that is *less than the nominal hook filament diameter*. In other words, the interwoven base of warp and weft yarns 422 has an overall thickness that is *less* than the nominal diameter of the filament 424 forming the hooks. By the wording of the claim, the "base" whose thickness is to be measured necessarily does not include the hook filaments 424. The relatively thin base is also seen in the figure reproduced above, with the thickness labeled "T_{g1}". Such a structure is described, e.g., in the Specification on page 4, lines 1 to 6, and on page 6, lines 7 and 20.

Independent claims 24 and 40 are reproduced in the appendix of pending claims.

(6) Grounds of Rejection

Claims 24-34, 36, 40-46 and 48 stand rejected under 35 U.S.C. §103(a) as obvious over Higachinaka, U.S. 5,515,583.

Claims 35 and 47 stand rejected under 35 U.S.C. §103(a) as obvious over Higachinaka in view of Reither, US 6,136,437.

Claims 37 and 48 stand rejected under 35 U.S.C. §103(a) as obvious over Higachinaka in view of Suzuki et al., US 5,294,469 ("Suzuki").

Claims 39 and 49 stand rejected under 35 U.S.C. §103(a) as obvious over Higachinaka in view of Love III, et al., US 2005/0282542 ("Love").

Claims 28, 30-32, 34 and 43-46 have been objected to as containing parenthetical metric conversions of units.

(7) Argument

(a) Rejection of claims 24-34, 36, 40-46 and 48 as obvious over Higachinaka

Claim 24 – Ratio of hook height to filament diameter

Regarding hook heights and filament diameters, Higachinaka includes the following: “The height of hook-like fastening elements 3 ... is 1.3 to 3.8 mm” (6:8-10). “Where a synthetic monofilament is used for preparing hook-like fastening elements, the monofilament generally has a diameter of 0.1 to 0.4 mm, preferably 0.14 to 0.25 mm.” (6:57-59). The disclosure of these preferred ranges is accompanied by discussion of why hook heights and filament diameters outside of those ranges are undesirable. Beginning at column 11, line 16, Higachinaka lists several “experimental examples” with listed dimensions. Applicants maintain that none of Higachinaka’s disclosed examples have hooks of the stout structure recited in Applicants’ claim 24.

With respect to the preferred ranges disclosed in columns 5-7 of Higachinaka, Applicants note that it is generally held that the disclosure in one document of ranges of multiple variables is not itself a disclosure of every combination of possible values in each range, unless someone of ordinary skill would find such combinations to be necessarily disclosed, with sufficient specificity. With respect to claim 24 it would be improper without further suggestion to take the ratio of the lower end of hook height (1.3 mm), and divide that value by the upper end of hook filament diameter (0.4 mm) to derive a hook filament diameter to hook height ratio of 3.25. Simply put, there is nothing in Higachinaka that would suggest that every value of one disclosed range in his columns 5-7 is useful or even functional in combination with every value of every other range. Rather, one of skill in the art may well have presumed from Higachinaka’s full disclosure that values toward the higher end of the hook monofilament diameter range would be considered only in combination with values from the higher end of the disclosed range for hook height. Therefore, although columns 5-7 of Higachinaka do include broad ranges of various values from which, assuming direct correspondence to the variables featured in Applicants’ claims, values could be pulled to derive ratios within the claimed ranges, that in itself is insufficient to find Applicants’ specific claimed range obvious.

The only clear disclosure in Higachinaka of combinations of hook filament diameters and hook heights is with respect to “experimental examples” 1-11. If one were to assume that the ratio featured in claim 24 corresponds particularly to values disclosed in these examples, the following ratios might be calculated:

Example	Hook diameter	Hook height	Hook height/dia ratio
1-4	0.2	1.3	6.5
5-8	0.17	1.9	11.2
9	0.21	1.5	7.1
10	0.34	2.0	5.9
11	0.34	1.8	5.3

From such an analysis, one might be tempted to improperly conclude that at least the hooks of examples 10 and 11 of Higachinaka are within the scope of Applicants' claim 24. However, in examples 10 and 11 of Higachinaka, the ‘hook-like fastening elements’ are headed stems (see Higachinaka, 12:65-13:3), not a severed hook filament loop structure as required by claim 24. The increased stoutness obtained by Applicants with the claimed feature combination is inapplicable to such straight filament projections with ‘swollen heads.’

The Examiner initially held claim 24 as anticipated over a combination of values within the broad ranges of Higachinaka's columns 5-7. Having withdrawn the anticipation rejection, the Examiner now raises two alternative theories upon which to base this obviousness rejection. Under one theory of record, claim 24 is obvious because the recitation of the hook structure as being “formed by a severed hook filament loop extending out of the fabric base” is insufficient to distinguish the headed stem structure of Higachinaka's examples 10 and 11. Under the second theory, advanced in an after-final interview during which the undersigned asked the Examiner to propose a more suitable structural recitation, even if the claim language were to be found to distinguish a headed stem the claimed stoutness range (less than 6.0) would still be obvious in light of Higachinaka's examples 1-4, the stoutest of Higachinaka's severed hooks (arguably having a height/diameter ratio of 6.5). As to the first theory, Applicants submit that the claim language does sufficiently and structurally characterize the nature of Applicants' hook fasteners.

As to the second theory, Applicants submit that they have already provided reasonable explanation in their original disclosure as to the discovered relevance and importance of this ratio and limitation, to hook fastener product performance, and that the claimed stoutness range is non-obvious over all of Higachinaka's examples.

There is simply nothing about Higachinaka to suggest to one of ordinary skill in this art that a severed loop hook of such stout dimensions would be either practical or useful, or to otherwise have motivated one of ordinary skill toward a range of hook stoutness beyond anything contemplated by Higachinaka. Without more, the Examiner's explanation does not provide even a *prima facie* case of obviousness, and must be presumed to be merely a hindsight explanation based on Applicants' own disclosure. As Applicants' claimed hook structure is a shift away from the hook fastener design paradigms illustrated by the cited art, it should therefore be recognized as a non-obvious contribution to the art. Applicants ask that the rejection be reversed.

Claim 40 – Comparison of base thickness to filament diameter

With respect to claim 40, none of the specific examples 1-11 described in Higachinaka disclose a base thickness. The Examiner has pointed to column 5, lines 22-23 of Higachinaka as disclosing a base thickness ranging from 0.3 to 3.0 mm, but there is nothing in the reference that links any specific thickness, within that range or otherwise, with the specific filament diameters disclosed in the examples the Examiner cites from column 11. Again, it would be improper and a *non sequitur* to compare the lower limit on the preferred range of base thickness (0.3) to the upper range of hook filament diameter (0.4) and conclude that Higachinaka discloses a hook product with a base thickness less than the hook filament diameter.

Nor has the Examiner pointed to anything in Higachinaka's disclosure, or within the general knowledge of the ordinarily skilled artisan, that would have led that artisan to produce a woven hook fastener product in which the fastener filaments were of a greater diameter than the thickness of the woven base. Indeed, it is a general understanding in the art that the woven base of the product provides a fabric ground that supports the filaments, and prior to Applicants' disclosure there is no evidence that anyone proposed supporting filaments thicker (in diameter) than the supporting fabric itself.

In the final office action the Examiner noted a confusion concerning the phrase "exclusive of the hook filaments" in the last paragraph of the claim. From the Examiner's summary of the interview, it appears that the Examiner may have misunderstood the phrase "exclusive of" as meaning "reduced by." Rather, the phrase is intended to have its traditional meaning, which Applicants loosely translate as "not including." In other words, the last paragraph of claim 40 requires that the fabric base has an overall thickness, not including the hook filaments (but including the interwoven warp yarns and filling yarns), that is less than the nominal hook filament diameter.

Applicants respectfully submit that the Examiner has not provided a *prima facie* case of obviousness regarding claim 40, and ask that the rejection be reversed.

(b) Rejection of claims 35 and 47 as obvious over Higachinaka in view of Reither

The Examiner has cited Reither as a secondary reference disclosing hook and loop fasteners with filaments having the high tenacity featured in these dependent claims. Whatever Reither may say about filament tenacity, this secondary reference discloses nothing relevant to low hook height or base thickness, as compared to filament diameter, as discussed above with respect to claims 24 and 40. Therefore, Applicants respectfully submit that these two dependent claims are non-obvious at least as depending from non-obvious base claims 24 and 40.

(c) Rejection of claims 37 and 48 as obvious over Higachinaka in view of Suzuki

The Examiner has cited Suzuki as a secondary reference disclosing hook and loop fastener products with a low Gurley stiffness featured in these dependent claims. Whatever Suzuki may say about Gurley stiffness, this secondary reference discloses nothing relevant to low hook height or base thickness, as compared to filament diameter, as discussed above with respect to claims 24 and 40. Therefore, Applicants respectfully submit that these two dependent claims are non-obvious at least as depending from non-obvious base claims 24 and 40.

(d) Rejection of claims 39 and 49 as obvious over Higachinaka in view of Love

The Examiner has cited Love as a secondary reference disclosing a fastener product with a low basis weight featured in these dependent claims. Whatever Love may say about basis

weight, this secondary reference discloses nothing relevant to low hook height or base thickness, as compared to filament diameter, as discussed above with respect to claims 24 and 40.

Therefore, Applicants respectfully submit that these two dependent claims are non-obvious at least as depending from non-obvious base claims 24 and 40.

In applying each of the above secondary references, the Examiner's justification for the rejection is to merely point out that each secondary reference discloses a particular feature and to note a general desirability or usefulness to have such a feature. However, the Examiner fails to address the interrelationship of these features with other features of the claimed combinations, or how someone of ordinary skill would have known how to arrive at the claimed invention from the disclosure of these references. For example, the Examiner does not address how to alter Higachinaka's fabric to achieve Love's low basis weight, or Suzuki's low Gurley stiffness, while meeting other limitations of the base claim. Applicants respectfully submit that these rejections are based upon an improper characterization of Higachinaka, as discussed above with respect to the rejection of the base claims, and improperly apply the standards of non-obviousness in their own right. As with the earlier rejection (now withdrawn) based on the Shepard and Goulait references, there is nothing in any of these references or their proposed combinations that would suggest to one of ordinary skill in the art how to achieve the claimed invention.

(e) Claim objections

Applicants submit that the parenthetical conversions of English to SI units in claims 28, 30-32, 34 and 43-46 do not make the claims indefinite to one of ordinary skill. However, should the Board maintain the Examiner's position as to such claims while reversing the prior art rejections, Applicants will remove such parenthetical conversions in further proceedings before the Examiner.

Applicants submit that all claims are allowable as pending, and respectfully request that the Examiner's rejections be reversed and that the Examiner be instructed to issue a notice of allowability without further delay.

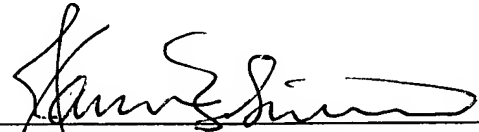
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5090

The necessary Appeal Brief and time extension fees have already been paid with the original Appeal Brief. Please apply any other charges or credits related to this Appeal to Deposit Account No. 06-1050, referencing the above attorney docket number.

Respectfully submitted,

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Appendix of Claims

1-23. (Canceled).

24. (Previously Amended) A woven hook fastener product including a fabric base having ground yarns comprising interwoven warp yarns and filling yarns extending respectively in warp and filling directions, and hook filaments interwoven with the fabric base and forming hooks extending from one side of the fabric base for engagement with loops, each hook being formed by a severed hook filament loop extending out of the fabric base,

wherein the hook filaments extend from a near side of the fabric base to a mean hook height of less than about 6.0 times a nominal diameter of the hook filaments.

25. (Original) The woven hook fastener product of claim 24 wherein each hook is formed by a severed hook filament loop extending out of the fabric base at two points separated by a span, measured along a line segment between centers of the hook filament at a near surface of the fabric base, and wherein each hook has a stance ratio, defined as a ratio of the span of the hook to an overall height of the hook from the near surface of the fabric base, of at least 50 percent.

26. (Original) The woven hook fastener product of claim 25 wherein the stance ratio is at least 55 percent.

27. (Original) The woven hook fastener product of claim 24 wherein each hook is formed by a severed hook filament loop extending out of the fabric base at two points separated in both warp and filling directions.

28. (Original) The woven hook fastener product of claim 24 wherein the fabric base has an overall thickness, exclusive of the hook filaments, of less than about 0.010 inch (0.254 mm).

29. (Original) The woven hook fastener product of claim 24 wherein the fabric base has an overall thickness, exclusive of the hook filaments, that is less than the nominal hook filament diameter.

30. (Original) The woven hook fastener product of claim 24 having an overall thickness, as a sum of fabric base thickness and the mean hook height, of less than about 0.075 inch (1.91 mm).

31. (Original) The woven hook fastener product of claim 24 wherein the mean hook height is less than about 0.065 inch (1.65 mm).

32. (Original) The woven hook fastener product of claim 31 wherein the mean hook height is less than about 0.05 inch (1.27 mm).

33. (Original) The woven hook fastener product of claim 24 wherein the hook filaments are drawn nylon monofilaments.

34. (Original) The woven hook fastener product of claim 24 wherein the hook filaments are each between about 0.0065 to 0.009 inch (0.165 to 0.229 mm) in nominal diameter.

35. (Original) The woven hook fastener product of claim 24 wherein the hook filaments have a tenacity of at least 4.0 grams per denier.

36. (Original) The woven hook fastener product of claim 24 wherein the ground yarns comprise multifilament yarns each having a denier of between about 60 and 140.

37. (Original) The woven hook fastener product of claim 24 having a Gurley stiffness of less than 500 mg.

38. (Previously presented) The woven hook fastener product of claim 24 having a Gurley stiffness of less than about 200 mg.

39. (Original) The woven hook fastener product of claim 24 having a greige basis weight of less than about 300 grams per square meter.

40. (Original) A woven hook fastener product including a fabric base having ground yarns comprising interwoven warp yarns and filling yarns extending respectively in warp and filling directions, and hook filaments interwoven with the fabric base and forming hooks extending from one side of the fabric base for engagement with loops,

wherein the fabric base has an overall thickness, exclusive of the hook filaments, that is less than the nominal hook filament diameter.

41. (Original) The woven hook fastener product of claim 40 wherein each hook is formed by a severed hook filament loop extending out of the fabric base at two points separated by a span, measured along a line segment between centers of the hook filament at a near surface of the fabric base, and wherein each hook has a stance ratio, defined as a ratio of the span of the hook to an overall height of the hook from the near surface of the fabric base, of at least 50 percent.

42. (Original) The woven hook fastener product of claim 41 wherein the stance ratio is at least 55 percent.

43. (Original) The woven hook fastener product of claim 40 wherein the fabric base has an overall thickness, exclusive of the hook filaments, of less than about 0.010 inch (0.254 mm).

44. (Original) The woven hook fastener product of claim 40 having an overall thickness, as a sum of fabric base thickness and the mean hook height, of less than about 0.075 inch (1.91 mm).

45. (Original) The woven hook fastener product of claim 40 wherein the mean hook height is less than about 0.065 inch (1.65 mm).

46. (Original) The woven hook fastener product of claim 40 wherein the hook filaments are each between about 0.0065 to 0.009 inch (0.165 to 0.229 mm) in nominal diameter.

47. (Original) The woven hook fastener product of claim 40 wherein the hook filaments have a tenacity of at least 4.0 grams per denier.

48. (Original) The woven hook fastener product of claim 40 wherein the ground yarns comprise multifilament yarns each having a denier of between about 60 and 140.

49. (Original) The woven hook fastener product of claim 40 having a greige basis weight of less than about 300 grams per square meter.

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Evidence Appendix

None.

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Related Proceedings Appendix

None.